CLAIMS

What is claimed is:

1. A method for analyzing a signal, comprising:

for a peak identified in a frequency representation of said signal, identifying a plurality of points in said frequency representation closest to said peak; and

determining a tone frequency and a tone amplitude of said signal utilizing a minimization algorithm, wherein said minimization algorithm minimizes an error function that measures a difference between (i) a windowed frequency representation of a tone at a given frequency and a given amplitude and (ii) said plurality of points.

2. The method of claim 1 further comprising:

determining a seed amplitude, a seed frequency, and a seed window length utilizing said plurality of points.

3. The method of claim 1, wherein said minimization algorithm is initialized utilizing said seed amplitude, seed frequency, and said seed window length.

4. The method of claim 2 wherein said determining a seed amplitude, a seed frequency, and a seed window length uses a polynomial fitting algorithm to derive a polynomial fitted to said plurality of points.

5. The method of claim 4 wherein said determining a seed amplitude, a seed frequency, and a seed window length uses a maximum value of said derived polynomial to generate said seed amplitude and said seed frequency.

6. The method of claim 1 wherein said error function is a summation of the absolute value linear difference between an amplitude of one of said plurality of points and an amplitude of said windowed frequency representation evaluated at a frequency of said one of said plurality of points, wherein the summation occurs over each of said plurality of points.

7. The method of claim 1 wherein said windowed frequency representation uses a raised-cosine window to window said tone at a given frequency and a given amplitude.

8. The method of claim 1 wherein said windowed frequency representation uses a Hanning window to window said tone at a given frequency and a given amplitude.

9. The method of claim 1 wherein said signal is a multi-tone signal and further comprising:

identifying a plurality of peaks in said frequency representation of said multi-tone signal; and

repeating said identifying a plurality of points and determining a tone frequency and a tone amplitude for each of said plurality of peaks.

10. A computer readable medium that includes executable instructions for processing trace data points of a multi-tone signal, said computer readable medium comprising:

code for receiving said trace data points, wherein said trace data points are associated with a plurality of peaks;

code for selecting, for one of said plurality of peaks, a plurality of points in said trace data points closest to said one of said plurality of peaks;

code for calculating a tone frequency and a tone amplitude of said multi-tone signal utilizing a minimization algorithm, wherein said minimization algorithm minimizes an error function that measures a difference between (i) a windowed frequency representation of a tone at a given frequency and a given amplitude and (ii) said plurality of points; and

code for controlling said code for selecting and calculating to perform said selecting and calculating for each of said plurality of peaks.

11. The computer readable medium of claim 10 further comprising:

code for determining a seed amplitude, a seed frequency, and a seed window length utilizing said plurality of points.

12. The computer readable medium of claim 11, wherein said minimization algorithm is initialized utilizing said seed amplitude, seed frequency, and said seed window length.

13. The computer readable medium of claim 11 wherein said code for determining a seed amplitude, a seed frequency, and a seed window length uses a polynomial fitting algorithm to derive a polynomial fitted to said plurality of points.

14. The computer readable medium of claim 11 wherein said error function is a summation over each of said plurality of points of the modulus of the difference between (i) an amplitude of one of said plurality of points and (ii) an amplitude of said windowed frequency representation evaluated at the same frequency as a frequency of said one of said plurality of points.

15. The computer readable medium of claim 10 wherein said windowed frequency representation is calculated utilizing a raised-cosine window.

16. A system for analyzing a multi-tone signal, comprising:

means for analyzing said multi-tone signal to generate a plurality of trace points;

means for identifying a plurality of trace peaks in said plurality of trace points; and

means for calculating a tone frequency and a tone amplitude of said multi-tone signal for each of said plurality of trace peaks utilizing a minimization algorithm, wherein said minimization algorithm minimizes an error function that measures a difference between (i) a windowed frequency representation of a tone at a given frequency and a given amplitude and (ii) a plurality of points that surrounds a respective one of said plurality of trace peaks.

17. The system of claim 16 wherein said means for minimizing performs a summation over each of said plurality of points of the modulus of the difference between (i) an amplitude of one of said plurality of points and (ii) an amplitude of said windowed frequency representation evaluated at the same frequency as a frequency of said one of said plurality of points.

18. The system of claim 16 further comprising:

means for generating seed values for said minimization algorithm.

19. The system of claim 16 wherein said means for calculating uses a raised-cosine window function.

20. The system of claim 16 wherein said means for calculating uses a Hanning window function.